

REMARKS

1. Claims 1-5, 7, 10-12, 14 and 15 are pending and stand rejected in the application. For the reasons presented below the claims as pending are patentably distinguishable over the prior art of record and the Examiner's rejection is traversed.

2. Rejection of Claims 1-5, 10-12, 14 and 15 under 35 U.S.C. § 103(a)

The Examiner rejects claims 1-5, 10-12, 14 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Hashimoto (US 5,309,214) in view of Papen et al. (US 5,379,310). For the reasons presented below, this rejection is traversed.

Claim 1 recites:

A refractometer comprising:

a refractometer prism, on a measuring surface of which a sample to be analyzed is placed;

a light source for illuminating the sample, wherein the light source comprises a plurality of discrete light sources;

a receiver for receiving light reflected from the sample; and

an optical diffraction grid for reflecting light from each of the discrete light sources into a single light point, wherein the light from each of the discrete light sources having different angle of incidence at the optical diffraction grid and same diffraction angle.

(emphasis in bold added). As highlighted by the text in bold, claim 1 requires an optical diffraction grid that receives the light beams from each of the plurality of discrete light sources that are reaching the optical diffraction grid at different incident angles and then diffracts them into a single light point. This optical diffraction grid is shown in FIG. 2 and described in paragraphs [0021] – [0022] of the Specification.

This novel feature of the invention allows combining different colored light

sources (i.e., different wavelengths) into one illumination light beam by having each discrete light source to have different angle of incidence at the optical diffraction grid. This means that each of the different colored light from the light source has a different reflection angle at the optical diffraction grid.

In contrast, the Hashimoto nor the Papen references disclose such optical diffraction grid. In rejecting the claims, the Examiner acknowledges that the Hashimoto fails to disclose such an optical diffraction grid. (See Office Action at page 3, lines 1-5). Then, however, the Examiner states that the Papen teaches this claimed limitation missing in the Hashimoto reference. The applicants disagree. In support of his argument, the Examiner cites FIGs. 1-3 and the corresponding texts at Column 3, lines 51-61 in Papen.

After a careful review of the Papen reference, the Applicants notes the following deficiencies of the Papen reference. As can be seen in FIG. 1 of Papen, Papen teaches the use of an optical grating **16** for tuning a number of laser wavelengths, $\lambda_a - \lambda_n$. The incoming **parallel** laser beams **14a – 14n** are reflected by the optical grating **16** and emerges as **parallel** output beams **20a – 20n**. (See Papen at Column 4, lines 6 – 28). Because the laser beams **14a – 14n** incident upon the optical grating **16** are parallel, each of the laser beams have the **same** incident angles at the optical grating **16** as shown in FIG. 2. And in order for the reflected output beams **20a - 20n** to be parallel to each other as disclosed in Papen, the reflection angles for each of the output beams **20a - 20n** must be the same, unlike in the refractometer of claim 1 of the present application.

Therefore, whether taken singly or in combination Hashimoto and Papen fails to suggest or teach “an optical diffraction grid for reflecting light from each of the discrete light sources into a single light point, wherein the light from each of the discrete light sources having different angle of incidence at the optical diffraction grid and same diffraction angle” required by claim 1.

Thus, the combined teachings of Hashimoto and Papen, even if they can be properly combined, does not disclose the invention claimed in claim 1 and can not obviate claim 1 under 35 U.S.C. § 103(a). The Applicants believe that the claimed refractometer that incorporates the optical diffraction grid in the claimed configuration is a novel innovation that allows combining different wavelength lights into a single output beam while maintaining very simple structure for the refractometer. Withdrawal of the rejection of claim 1 and its allowance are kindly requested.

Because claims 2-5, 10-12, 14 and 15 depend from claim 1, they are also allowable over the combination of Hashimoto and Papen. Withdrawal of the rejection of claims 2-5, 10-12, 14 and 15 and their allowance are kindly requested.

3. Rejection of Claim 7 under 35 U.S.C. § 103(a)

The Examiner rejects claim 7 as being unpatentable over Hashimoto in view of Papen and further in view of deJong (US 4,063,822). In rejecting claim 7, the Examiner relies on deJong for the proposition that deJong teaches lenses that optimize the transmission of the light through the interference filters at the same time.

Even if that were true, however, because claim 7 depends from claim 4 which in turn depends from claim 1, claim 7 incorporates all limitations of claim 1 and requires the optical diffraction grid discussed above. As discussed above, the combination of Hashimoto and Papen fails to disclose such optical diffraction grid and deJong also fails to disclose such optical diffraction grid. Therefore, the combined teachings of Hashimoto, Papen and deJong, even if they can be properly combined, do not disclose, teach or suggest the invention claimed in claim 7 and can not obviate claim 7 under 35 U.S.C. § 103(a). Withdrawal of the rejection of claim 7 and its allowance are kindly requested.

5. Conclusion

For the reasons presented above, Applicants believe that the pending claims are allowable over the prior art of record. Reconsideration of this application and allowance are requested. This response is being submitted within the shortened statutory period for responding to the Office Action and no fee is believed due. If a fee is required, however, the Director is hereby authorized to charge an appropriate amount to Duane Morris Deposit Account No. 04-1679.

Respectfully submitted,

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/Won Joon Kouh/
WON JOON KOUH
Registration No. 42,763

Attorney for Applicants
Duane Morris LLP
(609) 631-2435 (Telephone)
(609) 631-2401 (Facsimile)